

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-45. (Cancelled)

46. (Previously presented) A device, comprising:

a housing moveable in an x-y plane;

a sensor coupled to the housing and configured to output a sensor signal based on a movement of the housing in the x-y plane;

an actuator configured to output a haptic effect, the actuator having an eccentric mass rotatable about a shaft, the actuator configured to rotate the eccentric mass about the shaft with an acceleration upon being activated;

an actuator sensor coupled to the actuator and configured to measure the amount of rotation of the eccentric mass when the actuator is activated, wherein the actuator controls the amount of rotation of the eccentric mass in response to the measured amount of rotation to output an inertial haptic effect pulse to the housing.

47. (Previously presented) The device of claim 46, wherein the actuator is configured to rotate the eccentric mass approximately in a y-z plane.

48. (Previously presented) The device of claim 46, wherein the actuator is configured to rotate the eccentric mass approximately in an x-y plane.

49. (Previously presented) The device of claim 46, wherein the inertial force is a pulse correlated with a simulated interaction of a user-controlled cursor with a graphical object displayed in a graphical user interface.

50. (Previously presented) The device of claim 49, wherein the pulse is output with a magnitude based on a characteristic of the graphical object with which the cursor interacts.

51. (Cancelled)

52. (Previously presented) The device of claim 46, further comprising a microprocessor, separate from a host computer, coupled to the sensor and to the actuator, the microprocessor configured to receive host commands from the host computer and to output haptic force signals to the actuator, the inertial haptic force being based on the haptic force signals, the microprocessor further configured to output locative data to the host computer based on the sensor signal.

53. (Previously presented) The device of claim 46, wherein the sensor includes a ball that is configured to frictionally contact a surface on which the housing is moved, the surface being associated with the x-y plane.

54. (Previously presented) The device of claim 46, wherein the sensor includes an optical sensor configured to detect a movement of a surface relative to the mouse housing.

55. (Previously presented) The device of claim 46, wherein the actuator is controlled harmonically with a drive signal the actuator configured to rotate the eccentric mass bi-directionally to output the inertial haptic force pulse.

Claims 56-84. (Cancelled)

85. (Previously Presented) The interface device of claim 46 wherein the housing further comprises a moveable portion and a base portion, wherein the moveable portion is configured to be moveable with respect to the base portion.

86. (Withdrawn) The interface device of claim 85, further comprising a magnet coupled to the moveable portion of the housing, the actuator coupled to the base portion of the housing and positioned such that the eccentric mass is proximal to the magnet, wherein the eccentric mass is configured to at least one of magnetically attract and magnetically repel the magnet when rotated to produce the inertial haptic effect on the moveable portion.

87. (Previously Presented) The interface device of claim 85, wherein the moveable portion is a button on the housing.

88. (Previously Presented) The interface device of claim 85, wherein the moveable portion is a graspable by the user.

89. (Withdrawn) The interface device of claim 85, wherein the actuator is configured to output a spring force on the moveable portion.

90. (Withdrawn) The interface device of claim 85, wherein the actuator is configured to provide a resistive force on the moveable portion.

91. (Withdrawn) The interface device of claim 85, further comprising a stop member coupled to the moveable portion and positioned at least partially in a path of rotation of the eccentric mass, wherein the actuator is configured to produce a haptic force when the eccentric mass is moved against the stop member.

92. (Withdrawn) The interface device of claim 91, wherein the stop member further comprises:

a first stop member at a first position in the housing; and

a second stop member at a second position in the housing, wherein the first stop member and the second stop member are configured to define a range of rotation of the rotating eccentric mass.

93. (Withdrawn) The interface device of claim 92, wherein the actuator is configured to produce a vibration based on periodic interaction of the rotating eccentric mass against the stop member.

94. (Previously presented) An interface device for use with a computer device, comprising:
a housing;
a sensor coupled to the housing and configured to output a sensor signal to the computer device based on a manipulation of the housing by a user;

an actuator coupled to the housing and having an eccentric mass, the actuator configured to rotate the eccentric mass about a shaft in response to an actuating signal; and

an actuator sensor coupled to the actuator and configured to measure the amount of rotation of the eccentric mass upon receiving the actuating signal, wherein the actuator controls the amount of rotation of the eccentric mass in response to the measured amount of rotation to output an inertial haptic effect pulse to the housing.

95. (Previously Presented) The interface device of claim 94, wherein the housing further comprises a moveable portion and a base portion, wherein the moveable portion is configured to be moveable with respect to the base portion.

96. (Withdrawn) The interface device of claim 95, further comprising a magnet coupled to the moveable portion of the housing, the actuator coupled to the base portion of the housing and positioned such that the eccentric mass is proximal to the magnet, wherein the eccentric mass is configured to at least one of magnetically attract and magnetically repel the magnet when rotated to produce the inertial haptic effect on the moveable portion.

97. (Previously Presented) The interface device of claim 95, wherein the moveable portion is a button on the housing.

98. (Previously Presented) The interface device of claim 95, wherein the moveable portion is graspable by the user.

99. (Withdrawn) The interface device of claim 95, wherein the actuator is configured to output a spring force on the moveable portion.

100. (Withdrawn) The interface device of claim 95 wherein the actuator is configured to provide a resistive force on the moveable portion.

101. (Withdrawn) The interface device of claim 95, further comprising a stop member coupled to the moveable portion and positioned at least partially in a path of rotation of the eccentric mass, wherein the actuator is configured to produce a haptic force when the eccentric mass is moved against the stop member.

102. (Withdrawn) The interface device of claim 101 wherein the stop member further comprises:

a first stop member at a first position in the housing; and

a second stop member at a second position in the housing, wherein the first stop member and the second stop member are configured to define a range of rotation of the rotating eccentric mass.

103. (Withdrawn) The interface device of claim 101, wherein the actuator is configured to produce a vibration based on periodic interaction of the rotating eccentric mass against the stop member.

104. (Currently Amended) An interface device for use with a computer device, comprising:

a housing having a moveable portion and a base portion, wherein the moveable portion is moveable with respect to the base portion while coupled to the base portion;

a sensor coupled to the housing and configured to output a sensor signal to the computer device based on a manipulation of the housing by a user; and

an actuator coupled to the moveable portion of the housing, the actuator having an eccentric mass and configured to actuate the eccentric mass to output an inertial haptic force to the moveable portion in response to an actuating signal from the computer device, wherein the inertial haptic force is felt by the user when in contact with the moveable portion of the housing.

105. (Withdrawn) The interface device of claim 104, further comprising a magnet coupled to the moveable portion of the housing, the actuator coupled to the base portion of the housing and positioned such that the eccentric mass is proximal to the magnet, wherein the eccentric mass is configured to at least one of magnetically attract and magnetically repel the magnet when rotated to produce the inertial haptic effect on the moveable portion.

106. (Previously Presented) The interface device of claim 104, wherein the moveable portion is a button on the housing.

107. (Previously Presented) The interface device of claim 104, wherein the moveable portion is graspable by the user.

108. (Withdrawn) The interface device of claim 104, wherein the actuator is configured to output a spring force on the moveable portion.

109. (Withdrawn) The interface device of claim 104, wherein the actuator is configured to provide a resistive force on the moveable portion.

110. (Withdrawn) The interface device of claim 104, further comprising a stop member coupled to the moveable portion and positioned at least partially in a path of rotation of the eccentric mass, wherein the actuator is configured to produce a haptic force when the eccentric mass is moved against the stop member.

111. (Withdrawn) The interface device of claim 110, wherein the stop member further comprises:

a first stop member at a first position in the housing; and

a second stop member at a second position in the housing, wherein the first stop member and the second stop member are configured to define a range of rotation of the rotating eccentric mass.

112. (Withdrawn) The interface device of claim 104, wherein the actuator is configured to produce a vibration based on periodic interaction of the rotating eccentric mass against the stop member.

113. (Currently Amended) An interface device for use with a computer device, comprising:

a housing having a moveable portion and a base portion, wherein the moveable portion is moveable with respect to the base portion while coupled to the base portion;

means for sensing a manipulation of the housing by a user, wherein the means for sensing outputs a sensing signal to the computer device; and

means for producing an inertial haptic force to the moveable portion, the means for producing having an eccentric mass rotated about a shaft in response to an actuating signal from the computer device, wherein the inertial haptic force is felt by the user when in contact with the moveable portion of the housing.